

# Configurando um Cisco 3600 router com T1/E1 e módulos de rede de modem digital

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## [Introdução](#)

Em muitos ambientes, é necessário configurar um Servidor de acesso para aceitar o recebimento de chamadas de usuários assíncronos e ISDN. Esses usuários poderiam se conectar sem problemas à rede como se estivessem presentes fisicamente. Portanto, essa instalação é usada freqüentemente para fornecer a conectividade de rede para os usuários que trafegam ou se telecomunicam, assim como para as estações de Small Office-Home Office (SOHO).

Este documento trata de como configurar um Cisco 3600 Series Router para aceitar chamadas recebidas Assíncronas em circuitos ISDN T1 (PRI ou sinalização associada a canal [CAS]). Essa configuração inclui apenas o mínimo limitado exigido para que o Servidor de Acesso à Rede (NAS) aceite a chamada. Recursos adicionais podem ser acrescentados a esta configuração, dependendo das necessidades.

**Note:** Esta configuração não mostra como configurar a discagem assíncrona sobre BRI em um 3600 Series Router. Para obter mais informações, consulte o documento [Configuração da Conectividade de Modem com um Cisco 3640 BRI](#).

## [Pré-requisitos](#)

### [Requisitos](#)

Não existem requisitos específicos para este documento.

## Componentes Utilizados

Esta configuração foi desenvolvida e testada utilizando as versões de software e hardware abaixo.

- Um Cisco 3640 Series Router com um One-port Channelized T1/ISDN-PRI Network Module (NM-1CT1-CSU) e um 24 port Digital Modem Network Module (NM-24DM).
- O roteador Cisco 3640 está executando o Cisco IOS® Software Versão 12.1(5)T9.
- Um circuito PRI T1.
- Um circuito CAS T1.

As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se você estiver trabalhando em uma rede ativa, certifique-se de que entende o impacto potencial de qualquer comando antes de utilizá-lo.

## Produtos Relacionados

Esta configuração pode ser utilizada em qualquer Cisco 3600 Series Router com um T1/E1 Network Module e o Digital Modem Network Module.

Para um exemplo de configuração envolvendo os AS5x00 Series Routers, consulte o documento [Configuração de um Servidor de Acesso com PRIs para Chamadas de Entrada Assíncronas e ISDN](#).

Essa configuração pode também ser modificada para ser usada com portas E1 ou PRI. Configure o controlador E1 com a codificação de linha, enquadramento e outras características físicas suportadas pela Telco. A configuração do canal D PRI (serial de interface x:15 para E1s) é similar àquela mostrada aqui.

## Convenções

Para obter mais informações sobre convenções de documento, consulte as [Convenções de dicas técnicas Cisco](#).

## Configurar

Nesta seção, você encontrará informações para configurar os recursos descritos neste documento.

**Note:** Para encontrar a informação adicional nos comandos usados neste documento, use a [ferramenta de pesquisa do comando IOS \(clientes registrados somente\)](#).

## Diagrama de Rede

Este documento utiliza a instalação de rede mostrada no diagrama abaixo.

## Tarefas de pré-configuração

## Tarefa Um

Determine o número do slot no qual os modems digitais estão instalados. Use o comando EXEC **show diag** para determinar o slot no qual o módulo está instalado. Abaixo, um exemplo de saída do comando de EXEC show diag:

```
acc-3640-6a#show diag
Slot 0:
    CT1 (CSU) Port adapter, 1 port
! -- NM-1CT1-CSU is in slot 0. ! -- The T1 interfaces are addressed as controller t1 slot/port.
! -- In this example, controller t1 0/0. Port adapter is analyzed Port adapter insertion time
unknown EEPROM contents at hardware discovery: Hardware revision 1.1 Board revision D0 Serial
number 22677234 Part number 800-01228-04 Test history 0x0 RMA number 00-00-00 EEPROM format
version 1 EEPROM contents (hex): 0x20: 01 26 01 01 01 5A 06 F2 50 04 CC 04 00 00 00 00 0x30: 68
00 00 00 00 12 19 00 FF FF FF FF FF FF FF FF Slot 1:
    Digital Modems Port adapter, 24 ports
! -- Digital modems are in slot 1. Note that there are 24 modems. Port adapter is analyzed Port
adapter insertion time unknown EEPROM contents at hardware discovery: Hardware revision 0.3
Board revision UNKNOWN Serial number 0 Part number 00-0000-00 Test history 0x0 RMA number 00-00-
00 ... .. ! -- Irrelevant Output omitted .....
```

## Tarefa Dois

Determine os números de linha ou intervalo de interface assíncrona associada ao módulo do modem.

[Consulte a tabela encontrada no documento How Async Lines are Numbered in Cisco 3600 Series Routers para determinar o intervalo da linha.](#)

Neste exemplo, o Digital Modem Network Module está no slot 1 do Cisco 3640 Router. Consultando o documento mencionado anteriormente, constatamos que o intervalo do número de linha é de 33 a 64. Entretanto, como o módulo do modem possui apenas 24 portas, o intervalo é apenas das linhas 33 a 56 (as oito remanescentes não são utilizadas).

**Tip:** Você também pode usar a fórmula mostrada abaixo para encontrar o intervalo de linha:

```
acc-3640-6a#show diag
Slot 0:
    CT1 (CSU) Port adapter, 1 port
! -- NM-1CT1-CSU is in slot 0. ! -- The T1 interfaces are addressed as controller t1 slot/port.
! -- In this example, controller t1 0/0. Port adapter is analyzed Port adapter insertion time
unknown EEPROM contents at hardware discovery: Hardware revision 1.1 Board revision D0 Serial
number 22677234 Part number 800-01228-04 Test history 0x0 RMA number 00-00-00 EEPROM format
version 1 EEPROM contents (hex): 0x20: 01 26 01 01 01 5A 06 F2 50 04 CC 04 00 00 00 00 0x30: 68
00 00 00 00 12 19 00 FF FF FF FF FF FF FF FF Slot 1:
    Digital Modems Port adapter, 24 ports
! -- Digital modems are in slot 1. Note that there are 24 modems. Port adapter is analyzed Port
adapter insertion time unknown EEPROM contents at hardware discovery: Hardware revision 0.3
Board revision UNKNOWN Serial number 0 Part number 00-0000-00 Test history 0x0 RMA number 00-00-
00 ... .. ! -- Irrelevant Output omitted .....
```

Portanto, para o nosso exemplo, o número de linha inicial é  $(1 * 32) + 0 + 1 = 33$  e o número de linha final é 56.

## Configurações

Veja a seguir algumas amostras de configuração para um roteador Cisco 3640 que aceita chamadas assíncronas. O primeiro exemplo utiliza circuito CAS T1, enquanto o segundo utiliza circuito PRI T1. Escolha a configuração apropriada com base no seu circuito T1/E1.

### Cisco 3640 com T1 CAS

```
acc-3640-6a#show running-config
Building configuration...

Current configuration : 1137 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service internal
!
hostname acc-3640-6a
!
logging rate-limit console 10 except errors
!
username dialin password 0 user
! -- Usernames for local authentication of the call. ! -
- The client presents the username/password and the NAS
! -- authenticates the peer. ip subnet-zero ! no ip
finger no ip domain-lookup ! async-bootp dns-server
10.98.1.220 ! -- Specifies (for async clients) the IP
address of domain name server. async-bootp nbns-server
10.98.1.221 ! -- Specifies (for async clients) the IP
address of WINS server. call rsvp-sync ! controller T1
0/0 ! -- T1 Physical interface controller configuration.
! -- Interfaces are addressed as controller slot/port. !
-- In this example, the NM-1CT1-CSU module is in slot 0.
framing esf ! -- Framing for this T1 is Extended Super
Frame (ESF). ! -- Obtain this information from the
telco. linecode b8zs ! -- Linecoding for this T1. Obtain
this information from the telco. ds0-group 0 timeslots
1-24 type e & m-immediate-start; ! -- CAS T1 with E & M
Immediate Start provided by telco. ! -- Verify your
signaling type with your local provider. Prior to Cisco
IOS ! -- Software Release 12.0(5)T, this command was
known as cas-group. ! interface Ethernet2/0 ip address
10.98.1.51 255.255.255.0 half-duplex ! interface Group-
Async1 ! -- This group-async interface is the
configuration template for all modems. ! -- Individual
async interface do not have to be configured since they
! -- can be cloned from one managed copy. ip unnumbered
Ethernet2/0 encapsulation ppp dialer in-band dialer-
group 1 !--- Apply interesting traffic definition from
dialer-list 1. ! -- Note: The specified dialer-group
number must be the same as ! -- the dialer-list number;
in this example, defined to be "1". ! -- Interesting
traffic specifies the packets that should reset the idle
timer.

dialer idle-timeout 600
! -- Sets Idle timer to 600 seconds (10 minutes). async
mode dedicated ! -- Allows only PPP dialup. Prevents
users from establishing ! -- an "EXEC session" to the
router. If the async interface is to answer ! --
different connection types (exec,ppp,slip etc), ! -- use
```

```
async mode interactive in conjunction with autoselect  
ppp ! -- under the line configuration to auto detect the  
connection type. peer default ip address pool dialin ! -  
- Clients are assigned addresses from the ip address  
pool named "dialin".
```

```
ppp authentication chap pap  
group-range 33 56  
! -- Modems 33 through 56 are members of this group  
async interface. ! -- This range was determined in the  
section Pre-configuration Tasks. ! ip local pool dialin  
10.98.1.15 10.98.1.39 ! -- IP address pool for dialin  
clients. ip classless ip route 0.0.0.0 0.0.0.0 10.98.1.1  
no ip http server ! dialer-list 1 protocol ip permit ! -  
- Specifies all IP traffic as interesting. Interesting  
traffic ! -- specifies the packets that should reset the  
idle timer. ! -- This is applied to interface Group-  
Async 1 using dialer-group 1. ! -- Note: The specified  
dialer-list number must be the same as the ! -- dialer-  
group number; in this example, defined to be "1".
```

```
!  
dial-peer cor custom  
!  
line con 0  
  transport input none  
line 33 56  
! -- TTY lines for the NM-24DM Modems. ! -- This line  
range was determined in the section Pre-configuration  
Tasks. modem InOut ! -- Support incoming and outgoing  
modem calls. transport input all line aux 0 line vty 0 4  
login ! end
```

## Cisco 3640 com T1 PRI

```
acc-3640-6a#show running-config  
Building configuration...
```

```
Current configuration : 1200 bytes
```

```
!  
version 12.1  
no service single-slot-reload-enable  
service timestamps debug datetime msec  
service timestamps log uptime  
no service password-encryption  
!  
hostname acc-3640-6a  
!  
logging rate-limit console 10 except errors  
!  
username dialin password 0 user  
  
! -- Usernames for local authentication of the call. The  
client ! -- presents the username/password and the NAS  
authenticates the peer. ! -- To use AAA with RADIUS or  
TACACS+ refer to the document ! -- Implementing the  
Server-Based AAA Subsystem ip subnet-zero ! ! no ip  
finger no ip domain-lookup ! async-bootp dns-server  
10.98.1.220! -- Specifies (for async clients) the IP  
address of domain name server. async-bootp nbns-server  
10.98.1.221 ! -- Specifies (for async clients) the IP  
address of WINS server. isdn switch-type primary-5ess  
call rsvp-sync ! controller T1 0/0 ! -- T1 Physical
```

```

interface controller configuration. ! -- Interfaces are
addressed as controller slot/port. ! -- In this example,
the NM-1CT1-CSU module is in slot 0. framing esf ! --
Framing for this T1 is Extended Super Frame (ESF). ! --
Obtain this information from the telco. linecode b8zs !
-- Linecoding for this T1. Obtain this information from
the telco. pri-group timeslots 1-24 ! -- For T1 PRI
scenarios, all 24 T1 timeslots are assigned as ! -- ISDN
PRI channels. The router will now automatically create !
-- the corresponding D-channel: interface Serial 0/0:23.

!
interface Serial0/0:23
! -- D-channel configuration for T1 0/0. no ip address
encapsulation ppp isdn switch-type primary-5ess isdn
incoming-voice modem ! -- All incoming voice calls on
this T1 are sent to the modems. ! -- This command is
required if this T1 is to accept async calls. ! -- The
controller will now pass voice calls (bearer cap
0x9090A2) to the modem bank. ! interface Ethernet2/0 ip
address 10.98.1.51 255.255.255.0 half-duplex ! interface
Group-Async1 ! -- This group-async interface is the
configuration template for all modems. ! -- Individual
async interface do not have to be configured since they
can ! -- be cloned from one managed copy. ip unnumbered
Ethernet2/0 encapsulation ppp dialer in-band dialer-
group 1 !--- Apply interesting traffic definition from
dialer-list 1. ! -- Note: The specified dialer-group
number must be the same as ! -- the dialer-list number;
in this example, defined to be "1". ! -- Interesting
traffic specifies the packets that should reset the idle
timer.

dialer idle-timeout 600
async mode dedicated
! -- Allows only PPP dialup. Prevents users from
establishing an ! -- "EXEC session" to the router. If
the async interface is to answer different ! --
connection types(exec,ppp,slip etc), use async mode
interactive in ! -- conjunction with autoselect ppp
under the line configuration ! -- to auto detect the
connection type. peer default ip address pool dialin ! -
- Clients are assigned addresses from the ip address
pool named "dialin". ppp authentication chap pap group-
range 33 56 ! -- Modems 33 through 56 are members of
this group async interface. ! -- This range was
determined in the section Pre-configuration Tasks. ! ip
local pool dialin 10.98.1.15 10.98.1.39 ! -- IP address
pool for dialin clients. ip classless ip route 0.0.0.0
0.0.0.0 10.98.1.1 no ip http server ! dialer-list 1
protocol ip permit ! -- Specifies all IP traffic as
interesting. ! -- Interesting traffic specifies the
packets that should reset the idle timer. ! -- This is
applied to interface Group-Async 1 using dialer-group 1.
! -- Note: The specified dialer-list number must be the
same as the ! -- dialer-group number; in this example,
defined to be "1".

dial-peer cor custom
!
line con 0
transport input none
line 33 56
! -- TTY lines for the NM-24DM Modems. ! -- This line

```

```
range was determined in the section Pre-configuration Tasks.  
modem InOut ! -- Support incoming and outgoing  
modem calls. transport input all line aux 0 line vty 0 4  
login ! end
```

## [Verificar](#)

Esta seção fornece informações que você pode usar para confirmar se sua configuração está funcionando adequadamente.

Os determinados comandos de exibição são apoiados pela [ferramenta Output Interpreter](#) ([clientes registrados somente](#)), que permite que você ver uma análise do emissor de comando de execução.

- **show isdn status** - Garante que o roteador está se comunicando corretamente com o switch ISDN. Na saída, verifique se o status da camada 1 está ATIVO e se o estado de status da camada 2 = MULTIPLE\_FRAME\_ESTABLISHED é exibido. Esse comando exibe também o número de chamadas ativas.
- **show caller user username detail** - Mostra parâmetros para o usuário particular, como endereço IP designado, PPP, parâmetros de pacote PPP, etc. Se sua versão de Cisco IOS Software não apoia este comando, use o **comando show user**.
- **show dialer map** – Exibe os mapas configurados de discador dinâmicos e estáticos. Este comando pode ser utilizado para ver se um mapa de discador dinâmico foi criado. Sem um mapa de discadores, você não pode encaminhar pacotes.

## [Troubleshooting](#)

Esta seção fornece informações que podem ser usadas para o troubleshooting da sua configuração.

### [Troubleshooting de Recursos](#)

Utilize os seguintes recursos para Troubleshooting conforme necessário:

- [Troubleshooting de Chamada de Modem Recebida Para Troubleshooting de Falha de Chamada Analógica.](#)
- [PRI Async Modem Callin - informações adicionais sobre Troubleshooting de Falhas de Chamada Analógica.](#)
- [Fluxograma de Troubleshooting de T1 - Use este fluxograma se suspeitar que o circuito T1 não está funcionando de forma adequada.](#)
- [Testes de circuito fechado para linhas T1/56K](#) - Para verificar se a porta T1 do roteador está funcionando corretamente.

### [Comandos para Troubleshooting](#)

Determinados comandos show são suportados pela Ferramenta Output Interpreter, que permite que você veja uma análise do resultado do comando show.

**Note:** Antes de emitir **comandos debug**, consulte [Informações importantes sobre comandos](#)

## [debug.](#)

- debug dialer - Exibe informações de depuração de DDR sobre os pacotes recebidos em uma interface de discador. Estas informações podem ajudá-lo a assegurar que há tráfego interessante que pode utilizar a interface de discador.
- debug isdn q931 – Exibe a configuração de chamada e alinhamento da conexão de rede ISDN (Camada 3).
- **debugar o modem** - Indica a atividade de linha de modem em um servidor de acesso. A saída mostra quando a linha de modem muda de estado.
- debug modem csm - Um comando EXEC para fazer Troubleshooting do Call Switching Module (CSM) em roteadores com modems digitais internos. Com este comando, você pode rastrear a seqüência completa de chamadas recebidas e enviadas por switching.
- debug ppp negotiation – Exibe informações sobre o tráfego PPP e alterações enquanto negocia o Protocolo de controle de enlace (LCP), autenticação e Protocolo de controle de rede (NCP). Uma negociação de PPP bem-sucedida abre primeiramente o estado do LCP e, em seguida, autentica e, finalmente, negocia o NCP. Parâmetros multilink, como Maximum receive reconstructed unit (MRRU), são estabelecidos durante a negociação LCP.
- debug ppp authentication - Exibe as mensagens de protocolo de autenticação PPP, incluindo os intercâmbios do pacote CHAP e intercâmbios de protocolo de autenticação de senha (PAP).
- debug ppp error - Exibe erros do protocolo e estatísticas de erros associados à negociação e operação da conexão PPP

Seguem algumas saídas de depuração das chamada bem-sucedidas (usando T1 CAS). Preste atenção às seções em negrito e comentários fornecidos nas saídas. Compare a saída que você obtém com o resultado mostrado abaixo.

```
acc-3640-6a#show debug
```

```
CSM Modem Management:
```

```
Modem Management Call Switching Module debugging is on
```

```
PPP:
```

```
PPP authentication debugging is on
```

```
PPP protocol negotiation debugging is on
```

```
! -- Only debug modem csm, debug ppp authentication and ! -- debug ppp negotiation were activated.
```

```
acc-3640-6a#
```

```
00:13:42: Modem 255/255 CSM: received EVENT_CALL_DIAL_IN with call_id 0000
```

```
00:13:42: src 0/0/0 dest 255/0/255 cause 512
```

```
00:13:42: CSM: Next free modem = 1/0; statbits = 10020
```

```
00:13:42: Modem 1/0 CSM: modem is allocated, modems free=23
```

```
! -- The Call Switch Module (CSM) is informed of the call. ! -- The CSM allocates modem 1/0 to the incoming call.
```

```
00:13:42: Modem 1/0 CSM: (CSM_PROC_IDLE)<--DSX0_CALL 00:13:42: Modem 1/0 CSM:
```

```
(CSM_PROC_IC_CAS_CHANNEL_LOCKED)<--CSM_EVENT_MODEM_SETUP 00:13:42: Modem 1/0 CSM: received
```

```
EVENT_START_RX_TONE with call_id 0000 00:13:42: src 0/0/0 dest 1/0/0 cause 0 00:13:42: Modem 1/0
```

```
CSM: (CSM_PROC_IC_CAS_ANSWER_CALL)<--DSX0_START_RX_TONE 00:13:42: Modem 1/0 CSM: received
```

```
EVENT_CHANNEL_CONNECTED with call_id 0000 00:13:42: src 0/0/0 dest 1/0/0 cause 0 00:13:42: Modem
```

```
1/0 CSM: (CSM_PROC_IC_CAS_ANSWER_CALL)<--DSX0_CONNECTED 00:14:04: Modem 1/0 CSM:
```

```
(CSM_PROC_CAS_WAIT_FOR_CARRIER)<--MODEM_CONNECTED
```

```
! -- Modem 1/0 is Connected. 00:14:07: %LINK-3-UPDOWN: Interface Async33, changed state to up
```

```
! -- Modem 1/0 corresponds to int async 33 (and line 33). 00:14:07: As33 PPP: Treating
```

```
connection as a callin 00:14:07: As33 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 0 load]
```

```
00:14:07: As33 LCP: State is Listen
```

```
! -- LCP negotiation begins. 00:14:08: As33 LCP: I CONFREQ [Listen] id 2 len 23 ! -- Incoming
```

```
LCP CONFREQ. ! -- For more information on interpreting PPP debugs refer to the document ! --
```



Dialup Technology: Troubleshooting Techniques. 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: Callback 6 (0x0D0306) 00:14:08: As33 LCP: O CONFREQ [Listen] id 12 len 25 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: AuthProto CHAP (0x0305C22305) 00:14:08: As33 LCP: MagicNumber 0xD0653B57 (0x0506D0653B57) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: O CONFREQ [Listen] id 2 len 7 00:14:08: As33 LCP: Callback 6 (0x0D0306) 00:14:08: As33 LCP: I CONFACK [REQsent] id 12 len 25 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: AuthProto CHAP (0x0305C22305) 00:14:08: As33 LCP: MagicNumber 0xD0653B57 (0x0506D0653B57) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: I CONFREQ [ACKrcvd] id 3 len 20 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: O CONFACK [ACKrcvd] id 3 len 20 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: **As33 LCP: State is Open**

*! --- LCP negotiation is complete.* 00:14:08: As33 PPP: Phase is AUTHENTICATING, by this end [0 sess, 0 load] 00:14:08: As33 CHAP: O CHALLENGE id 1 len 32 from "acc-3640-6a" 00:14:08: As33 AUTH: Started process 0 pid 94 00:14:08: As33 CHAP: I RESPONSE id 1 len 27 from "dialin" 00:14:08: **As33 CHAP: O SUCCESS** id 1 len 4

*! -- CHAP authentication is successful. ! -- If this fails verify that the username and password are correct. ! -- Refer to Dialup Technology: Troubleshooting Techniques.* 00:14:08: As33 **PPP: Phase is UP** [0 sess, 0 load]

*! -- IPCP negotiation begins.* 00:14:08: As33 IPCP: O CONFREQ [Closed] id 1 len 10 00:14:08: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:08: As33 IPCP: I CONFREQ [REQsent] id 1 len 40 00:14:08: As33 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) 00:14:08: As33 IPCP: Address 0.0.0.0 (0x030600000000) 00:14:08: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) 00:14:08: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:08: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:08: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:08: As33 IPCP: Pool returned 10.98.1.15 ! -- The IP Address Pool "dialin" provides the address for the client 00:14:08: As33 IPCP: O CONFREQ [REQsent] id 1 len 22 00:14:08: As33 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) 00:14:08: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:08: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:08: As33 CCP: I CONFREQ [Not negotiated] id 1 len 15 00:14:08: As33 CCP: MS-PPC supported bits 0x00000001 (0x120600000001) 00:14:08: As33 CCP: Stacker history 1 check mode EXTENDED (0x1105000104) 00:14:08: As33 LCP: O PROTREQ [Open] id 13 len 21 protocol CCP 00:14:08: As33 LCP: (0x80FD0101000F12060000000111050001) 00:14:08: As33 LCP: (0x04) 00:14:08: As33 IPCP: I CONFACK [REQsent] id 1 len 10 00:14:08: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:10: As33 IPCP: TIMEOUT: State ACKrcvd 00:14:10: As33 IPCP: O CONFREQ [ACKrcvd] id 2 len 10 00:14:10: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:10: As33 IPCP: I CONFACK [REQsent] id 2 len 10 00:14:10: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 2 len 34 00:14:11: As33 IPCP: Address 0.0.0.0 (0x030600000000) 00:14:11: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) 00:14:11: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:11: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:11: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:11: As33 IPCP: O CONFREQ [ACKrcvd] id 2 len 16 00:14:11: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:11: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 3 len 22 00:14:11: As33 IPCP: Address 0.0.0.0 (0x030600000000) 00:14:11: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) 00:14:11: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:11: As33 IPCP: O CONFACK [ACKrcvd] id 3 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) 00:14:11: As33 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 4 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) 00:14:11: As33 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) 00:14:11: As33 IPCP: O CONFACK [ACKrcvd] id 4 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33 IPCP: **PrimaryDNS 10.98.1.220** (0x81060A6201DC)

*! -- The Primary DNS server is agreed upon. ! -- This was configured using the async bootp commands.* 00:14:11: As33 IPCP: **PrimaryWINS 10.98.1.221** (0x82060A6201DD)

*! -- The Primary WINS server is agreed upon. ! -- This was configured using the async bootp commands.* 00:14:11: As33 **IPCP: State is Open**

*! -- IPCP negotiation is complete. The user is now connected.* 00:14:11: As33 **IPCP: Install route to 10.98.1.15**

*! -- The NAS installs a route to the client.*

Um ping de ICMP para o correspondente remoto foi bem-sucedido.

```
acc-3640-6a#ping 10.98.1.15
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.98.1.15, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 124/138/148 ms

```
acc-3640-6a#
```

Veja a seguir algumas saídas de depuração das chamadas bem-sucedidas (usando T1 PRI). Preste atenção às seções em negrito e comentários fornecidos nas saídas. Compare a saída que você obtém com o resultado mostrado abaixo.

```
acc-3640-6a#show debug
```

CSM Modem Management:

Modem Management Call Switching Module debugging is on

PPP:

PPP authentication debugging is on

PPP protocol negotiation debugging is on

ISDN:

ISDN Q931 packets debugging is on

ISDN Q931 packets debug DSLs. (On/Off/No DSL:1/0/-)

DSL 0 --> 31

1 - - - - -

**! -- Only debug modem csm, debug ppp authentication, debug ppp negotiation and ! -- debug isdn q931 were activated.**

```
acc-3640-6a#
```

```
*Mar 1 00:22:43.743: ISDN Se0/0:23: RX <- SETUP pd = 8 callref = 0x32
```

**! -- Incoming Q.931 SETUP message. Indicates an incoming call. ! -- For more information on Q.931 refer to the document. ! -- Troubleshooting ISDN Layer 3 using the debug isdn q931 Command.**

```
*Mar 1 00:22:43.747: Bearer Capability i = 0x9090A2 *Mar 1 00:22:43.747: Channel ID i = 0xA98393 *Mar 1 00:22:43.747: Calling Party Number i = 0x2183, '9194722001', Plan:ISDN, Type:National *Mar 1 00:22:43.747: Called Party Number i = 0xC1, '9194724137', Plan:ISDN, Type:Subscriber(local) *Mar 1 00:22:43.755: CSM: MODEM_REPORT from 0/0:18, call_id=0x4, event=0x1, cause=0x0, dchan_idb=0x62442AB8 *Mar 1 00:22:43.755: CSM: Next free modem = 1/3; statbits = 10020
```

**! -- The Call Switch Module (CSM) is informed of the call. ! -- The CSM allocates modem 2/0 to the incoming call.**

```
*Mar 1 00:22:43.755: Modem 1/3 CSM: modem is allocated, modems free=23 *Mar 1 00:22:43.755: Modem 1/3 CSM: Incoming call from 9194722001 to 9194724137, id 0x4 *Mar 1 00:22:43.755: Modem 1/3 CSM: (CSM_PROC_IDLE)<--ISDN_CALL *Mar 1 00:22:43.803: ISDN Se0/0:23: TX -> CALL_PROC pd = 8 callref = 0x8032
```

```
*Mar 1 00:22:43.803: Channel ID i = 0xA98393
```

**! -- The Call Proceeding Message is sent through the D-channel.**

```
*Mar 1 00:22:43.807: ISDN Se0/0:23: TX -> ALERTING pd = 8 callref = 0x8032 *Mar 1 00:22:43.807: ISDN Se0/0:23: TX -> CONNECT pd = 8 callref = 0x8032
```

**! -- D-channel transmits a CONNECT.**

```
*Mar 1 00:22:43.907: ISDN Se0/0:23: RX <- CONNECT_ACK pd = 8 callref = 0x32
```

**! -- Received the Q.931 CONNECT\_ACK.**

```
*Mar 1 00:22:43.911: ISDN Se0/0:23: CALL_PROGRESS: CALL_CONNECTED call id 0x4, bchan 18, dsl 0 *Mar 1 00:22:43.911: CSM: MODEM_REPORT from 0/0:18, call_id=0x4, event=0x4, cause=0x0, dchan_idb=0x62442AB8 *Mar 1 00:22:43.911: Modem 1/3 CSM: MODEM_REPORT rcvd DEV_CONNECTED for call_id 0x4 *Mar 1 00:22:43.911: Modem 1/3 CSM: (CSM_PROC_MODEM_RESERVED)<--ISDN_CONNECTED 00:22:43: %ISDN-6-CONNECT: Interface Serial0/0:18 is now connected to 9194722001 *Mar 1 00:23:06.291: Modem 1/3 CSM: (CSM_PROC_WAIT_FOR_CARRIER)<--MODEM_CONNECTED
```

**! -- Modem is connected.** 00:23:08: %LINK-3-UPDOWN: **Interface Async36, changed state to up**

**! -- Modem 1/3 corresponds to int async 36 (and line 36).**

```
*Mar 1 00:23:08.755: As36 PPP: Treating connection as a callin *Mar 1 00:23:08.755: As36 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 0 load] *Mar 1 00:23:08.755: As36 LCP: State is Listen
```

**! -- LCP negotiation begins.**

```
*Mar 1 00:23:09.399: As36 LCP: I CONFREQ [Listen] id 2 len 23
```

*! -- Incoming LCP CONFREQ. ! -- For more information on interpreting PPP debugs refer to the document ! -- [Dialup Technology: Troubleshooting Techniques](#).* \*Mar 1 00:23:09.399: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.399: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) \*Mar 1 00:23:09.399: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.399: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.399: As36 LCP: Callback 6 (0x0D0306) \*Mar 1 00:23:09.399: As36 LCP: O CONFREQ [Listen] id 1 len 25 \*Mar 1 00:23:09.399: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.399: As36 LCP: AuthProto CHAP (0x0305C22305) \*Mar 1 00:23:09.403: As36 LCP: MagicNumber 0xD06D7DF1 (0x0506D06D7DF1) \*Mar 1 00:23:09.403: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.403: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.403: As36 LCP: O CONFREQ [Listen] id 2 len 7 \*Mar 1 00:23:09.403: As36 LCP: Callback 6 (0x0D0306) \*Mar 1 00:23:09.523: As36 LCP: I CONFACK [REQsent] id 1 len 25 \*Mar 1 00:23:09.523: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.523: As36 LCP: AuthProto CHAP (0x0305C22305) \*Mar 1 00:23:09.523: As36 LCP: MagicNumber 0xD06D7DF1 (0x0506D06D7DF1) \*Mar 1 00:23:09.523: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.523: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.527: As36 LCP: I CONFREQ [ACKRcvd] id 3 len 20 \*Mar 1 00:23:09.531: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.531: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) \*Mar 1 00:23:09.531: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.531: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.531: As36 LCP: O CONFACK [ACKRcvd] id 3 len 20 \*Mar 1 00:23:09.531: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) \*Mar 1 00:23:09.531: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) \*Mar 1 00:23:09.531: As36 LCP: PFC (0x0702) \*Mar 1 00:23:09.531: As36 LCP: ACFC (0x0802) \*Mar 1 00:23:09.531: **As36 LCP: State is Open**

*! --- LCP negotiation is complete.* \*Mar 1 00:23:09.531: As36 PPP: Phase is AUTHENTICATING, by this end [0 sess, 0 load] \*Mar 1 00:23:09.531: As36 CHAP: O CHALLENGE id 1 len 32 from "acc-3640-6a" \*Mar 1 00:23:09.651: As36 CHAP: I RESPONSE id 1 len 27 from "dialin" \*Mar 1 00:23:09.655: As36 **CHAP: O SUCCESS id 1 len 4**

*! -- CHAP authentication is successful. ! -- If this fails verify that the username and password are correct. ! -- Refer to [Dialup Technology: Troubleshooting Techniques](#).* \*Mar 1 00:23:09.655: As36 PPP: Phase is UP [0 sess, 0 load] \*Mar 1 00:23:09.655: As36 IPCP: O CONFREQ [Closed] id 1 len 10 \*Mar 1 00:23:09.655: As36 IPCP: Address 10.98.1.51 (0x03060A620133) \*Mar 1 00:23:09.771: As36 IPCP: I CONFREQ [REQsent] id 1 len 40 \*Mar 1 00:23:09.771: As36 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) \*Mar 1 00:23:09.771: As36 IPCP: Address 0.0.0.0 (0x030600000000) \*Mar 1 00:23:09.771: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) \*Mar 1 00:23:09.771: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) \*Mar 1 00:23:09.771: As36 **IPCP: Pool returned 10.98.1.15**

*! -- The IP Address Pool "dialin" provides the address for the client.* \*Mar 1 00:23:09.771: As36 IPCP: O CONFREQ [REQsent] id 1 len 22 \*Mar 1 00:23:09.771: As36 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) \*Mar 1 00:23:09.771: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) \*Mar 1 00:23:09.779: As36 CCP: I CONFREQ [Not negotiated] id 1 len 15 \*Mar 1 00:23:09.779: As36 CCP: MS-PPC supported bits 0x00000001 (0x120600000001) \*Mar 1 00:23:09.779: As36 CCP: Stacker history 1 check mode EXTENDED (0x1105000104) \*Mar 1 00:23:09.779: As36 LCP: O PROTREQ [Open] id 2 len 21 protocol CCP \*Mar 1 00:23:09.779: As36 LCP: (0x80FD0101000F12060000000111050001) \*Mar 1 00:23:09.779: As36 LCP: (0x04) \*Mar 1 00:23:09.783: As36 IPCP: I CONFACK [REQsent] id 1 len 10 \*Mar 1 00:23:09.783: As36 IPCP: Address 10.98.1.51 (0x03060A620133) \*Mar 1 00:23:11.655: As36 IPCP: TIMEOUT: State ACKRcvd \*Mar 1 00:23:11.655: As36 IPCP: O CONFREQ [ACKRcvd] id 2 len 10 \*Mar 1 00:23:11.655: As36 IPCP: Address 10.98.1.51 (0x03060A620133) \*Mar 1 00:23:11.759: As36 IPCP: I CONFACK [REQsent] id 2 len 10 \*Mar 1 00:23:11.759: As36 IPCP: Address 10.98.1.51 (0x03060A620133) \*Mar 1 00:23:12.759: As36 IPCP: I CONFREQ [ACKRcvd] id 2 len 34 \*Mar 1 00:23:12.763: As36 IPCP: Address 0.0.0.0 (0x030600000000) \*Mar 1 00:23:12.763: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) \*Mar 1 00:23:12.763: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) \*Mar 1 00:23:12.763: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) \*Mar 1 00:23:12.763: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) \*Mar 1 00:23:12.763: As36 IPCP: O CONFREQ [ACKRcvd] id 2 len 16 \*Mar 1 00:23:12.763: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) \*Mar 1 00:23:12.763: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) \*Mar 1 00:23:12.871: As36 IPCP: I CONFREQ [ACKRcvd] id 3 len 22 \*Mar 1 00:23:12.871: As36 IPCP: Address 0.0.0.0 (0x030600000000) \*Mar 1 00:23:12.871: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) \*Mar 1 00:23:12.871: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) \*Mar 1 00:23:12.871: As36 IPCP: O CONFNAK [ACKRcvd] id 3 len 22 \*Mar 1 00:23:12.871: As36 IPCP: Address 10.98.1.15 (0x03060A62010F) \*Mar 1 00:23:12.871: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) \*Mar 1 00:23:12.871: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) \*Mar 1 00:23:12.979: As36 IPCP: I CONFREQ [ACKRcvd] id 4 len 22 \*Mar 1 00:23:12.979: As36 IPCP: Address 10.98.1.15 (0x03060A62010F) \*Mar 1 00:23:12.979: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) \*Mar 1 00:23:12.983: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) \*Mar 1 00:23:12.983: As36 IPCP: O CONFACK [ACKRcvd] id 4 len 22 \*Mar 1 00:23:12.983: As36 IPCP: Address 10.98.1.15

```
(0x03060A62010F) *Mar 1 00:23:12.983: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC)
! -- The Primary DNS server is agreed upon. ! -- This was configured using the async bootp
commands. *Mar 1 00:23:12.983: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD)
! -- The Primary WINS server is agreed upon. ! -- This was configured using the async bootp
commands. *Mar 1 00:23:12.983: As36 IPCP: State is Open
! -- IPCP negotiation is complete. The user is now connected. *Mar 1 00:23:12.983: As36 IPCP:
Install route to 10.98.1.15
! -- The NAS installs a route to the client.
```

Um ping de ICMP para o correspondente remoto foi bem-sucedido.

```
acc-3640-6a#ping 10.98.1.15
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.98.1.15, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 124/132/140 ms
```

```
acc-3640-6a#
```

## [Informações Relacionadas](#)

- [Digital Modem Network Module para Cisco 3640](#)
- [Suporte de T1 CAS para o Digital Modem Network Module para Cisco 3640](#)
- [Configurando o ISDN PRI e outras sinalizações em linhas E1 e T1](#)
- [Visão geral sobre interfaces, controladores e linhas usados para acesso discado](#)
- [Suporte Técnico - Cisco Systems](#)